PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

#25 Reply Brief
M. Brunson
8/20/03

In re Application of:

Trung T. Doan

Serial No.: 09/506,204

Filed: February 17, 2000

For: CONTACT/VIA FORCE FILL TECHNIQUES AND RESULTING STRUCTURES

Confirmation No.: 6685

Examiner: T. Quach

Group Art Unit: 2814

Attorney Docket No.: 2269-3025.1US (95-1003.1)

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REPLY BRIEF

Mail Stop Appeal Brief – Patents
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sirs:

Pursuant to 37 C.F.R. 1.193, this reply brief is presented in response to the Examiner's Answer mailed on April 9, 2003, and is submitted in TRIPLICATE pursuant to 37 C.F.R. § 1.192(a).

RESPONSE TO NEW ARGUMENTS IN EXAMINER'S ANSWER

Appellant will limit its arguments in this Reply Brief to new arguments presented in the Examiner's Answer. All other arguments made by the Examiner in his Answer have been previously addressed in the Appeal Brief, are incorporated by reference herein, and for sake of succinctness will not be repeated herein.

The Examiner states that, "with regard to the void-free recitation such would be met or otherwise rendered obvious over Saran which clearly shows the void-free aluminum contact, e.g., Figs. 1B and 2B . . . ." (Examiner's Answer at pg. 6). However, as stated in the Appeal Brief, while Figs. 1B and 2B appear to show the contact holes being completely filled by the aluminum material, Figs. 1B and 2B must be interpreted in view of the specification. Saran "must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." M.P.E.P. § 2141.02 (citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 421 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). In view of those teachings, Appellant respectfully disagrees with the Examiner's reading of Saran and specifically points out that the description of these figures describes applying pressure that " substantially fills the void therein." (Emphasis added, Saran, column 3, lines 3-5 and lines 37-39). While the fill metal substantially fills the void therein of opening 20, Saran does teach or suggest completely filling the void (i.e. being void-free) as required in the pending claims. Stated differently, Saran does no more than describe the problems identified in the Background of the Invention section of the present application.

The Examiner also states that the "non-deformed aluminum bridge is further apparent in Figs. 1B and 2B in Saran wherein no deformation is shown" and that "Appellant has failed to show . . . that the product in Saran is not non-deformed." (Examiner's Answer at pg. 6). As previously discussed in the Appeal Brief, Saran describes that "[a]fter the formation of surgace

coating layers 62 and 64, pressure is exerted isostatically thereon. The high pressure forces the fill metal to descend into opening 20." (Emphasis added, Saran, column 3, lines 3-4 and lines 36-39). The Examiner has ignored this argument and the disclosure in Saran in making his statement that Appellant failed to show that the product in Saran is "not non-deformed." When the figures in Saran are interpreted correctly in view of their description in the specification, it is clear that a nondeformed aluminum bridge is not taught or suggested. The Examiner also argues that the "problem with deformed surface of the aluminum would be obviated since Saran employs a surface coating which serves to minimize shear forces." (Examiner's Answer at pg. 6). This statement, however, simply describes use of a different product and use of a different method to achieve a similar result, which consists of a "teaching away" of the present invention. As with other elements of the pending claims, Appellant respectfully submits that the Examiner has not carried his burden of proving obviousness.

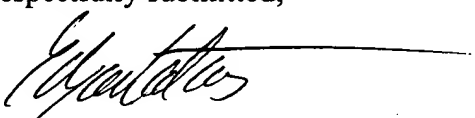
In its Appeal Brief, Appellant stated that Saran teaches deposition of barrier/adhesion layers 22/24 and 52/54 between the fill metal layer (30/60) and the substrate (18/48), which is contrary to the recitations of the pending claims, which require an aluminum alloy-containing material that is in direct contact with the underlying substrate and which does not require the existence of a barrier/adhesion layer between the aluminum alloy and the substrate. The present invention eliminates the need for deposition of barrier/adhesion layers in order to conserve the target material composition. (Specification, page 8, lines 14-20). Accordingly, Saran merely recites the shortcomings of prior art structures as described in the Background of the Invention of the present application and, thus, teaches away from the present invention.

In response to this issue, the Examiner maintains that because Saran states that a barrier may be included (but is not required), direct contact would have been obvious between the alloy

material and the underlying substrate. (Examiner's Answer at pg. 8). However, has not described a single embodiment in the specification of Saran with all of the claimed limitations that also exclude the barrier layer. Instead, the Examiner has relied on the recitation of claim 1 of Saran to argue that a barrier layer is not required (ignoring the "comprising" language of the claims). However, it is respectfully submitted that such lack of recitation in a broad, independent claim does not alter the enabling disclosure in the specification that describes all embodiments as containing a barrier layer.

In sum, Appellant maintains that Saran does not include a single embodiment lacking the barrier layer and including a void-free, homogeneous aluminum alloy material within contact holes in an insulating layer, in direct contact with a substrate and having a nondeformed aluminum bridge over the contact holes, as required by the pending claims. Furthermore, as discussed in the Appeal Brief, Kobayashi does not supplement the deficiencies in the Saran reference in order to establish a *prima facie* case of obviousness and, further, cannot properly be combined with Saran. In view of the foregoing arguments, and those made in the Appeal Brief, the Appellant respectfully requests that the Board reverse the Examiner's obviousness rejections.

Respectfully submitted,



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TRANSMITTAL OF REPLY BRIEF

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Sir:

Transmitted herewith in triplicate is the REPLY BRIEF in this application further to the Examiner's Answer dated April 9, 2003.

Any additional appeal fees which are not otherwise submitted herewith or which are insufficient should be charged to deposit account no. 20-1469. A duplicate copy of this notice is enclosed. Please address all communications in connection with this appeal to the address indicated below.

Respectfully submitted,

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